Patent claims

1. An Ethernet system comprising,

an Ethernet switch (SW), having a number of first ports (l), being adapted to communicate at a first speed and a number of second ports (h) being adapted to operate at a second higher speed, the switching device defining a number of Ethernet segments over each respective port, each port being adapted to route incoming messages according to their destination addresses, while storing the departure addresses in a routing table, the switching device comprising a memory buffer for momentarily storing messages being communicated over the ports,

a plurality of end stations (ES), each end station having at least one Ethernet transceiver (T1; T2) and being adapted to be coupled to one of either said first and second ports (l, h), respectively over media paths (MP)

characterised in that

the system comprises an infrastructure (IFR, IFR1, IFR2), comprising at least one media section group (MSG), the at least one media section group (MSG) comprising a first media section (MSN, l) and a second media section (MSN, h), the first and the second media section, comprising a number of media paths (MP) having terminal points in both ends,

the infra structure (IFR, IFR1, IFR2) being arranged in such a manner that all media sections (MSN, h, l) of a media section group (MSG) are occupied when an end station is coupled to the respective media section group (MSG) of the fixed infra structure (IFR), and that one media section (MSN, l) is reserved for transceivers operating at a first speed or first ports (l) while the other media section (MSN, h) is reserved for transceivers operating at a second speed or second ports (h).

2. Ethernet system according to claim 1, comprising

an end station (ESD; ESH; ESL) having a first speed transceiver (T1) and/ or a second higher speed transceiver (T2), whereby when the end station is coupled

over the respective first and second media sections (MSN, h, l) of an arbitrary media section group (MSG) of the infrastructure (IFR) to a switch (SW) for instance, the first speed transceiver (T1) is connected with a first speed port (l) of the switch, if existing, and the second speed transceiver (T2) is connected with a second speed port (h), if existing.

3. Ethernet system according to claim 2, whereby the first transceiver is a 100 Base-TX transceiver and the second transceiver is a 1000 Base-CX transceiver and wherein the media section group consists of a Cat 5, 4 pair twisted cable.

4. Ethernet system according to claim 2 ~~or 3~~, whereby the infrastructure (IFR) consists of a magazine of Cat 5, 4 pair cables.

5. Ethernet system according to claim 2, wherein the first media section (MSN, h) of a media section group (MSG) consists of media being different from the media of the second media section (MSN, l) in the same media section group (MSG).

~~6.~~ End station (ESD) comprising

a data terminal equipment (DTE) comprising at least one media access control unit for media access control (MAC) and signal conversion between high level protocol signals to reconciliation signals,

a first transceiver (T1; T2) being coupled to the data terminal equipment (DTE) over a first interface (MII), the first transceiver being adapted to be coupled to media paths (MP), the first transceiver (T1) being capable of operating at a first speed,

characterised in that

the end station (ESD) furthermore comprising

a second transceiver (T1; T2) being coupled to the data terminal equipment (DTE) and being adapted to be coupled to a second media section (MSN), offering media paths (MP) distinct from a first media section, the second transceiver (T1; T2) being capable of operating at a second speed,

the first and the second transceiver (T1, T2) being adapted to convert signals from connector signals to physical media signalling on the respective media paths (MP),

a media selector (MS) for monitoring whether signals can be transmitted over the first transceiver (T1) or over the second transceiver (T2), respectively, to opposing switch ports or transceivers and if signals can be transmitted over the second transceiver (T2) controlling the end station (ESD) to communicate over the second transceiver (T2), and otherwise controlling the data terminal equipment (DTE) to communicate over the first transceiver (T1).

7. End station according to claim 6, whereby the media selector (MS) derives a signal from the first transceiver and the second transceiver (T1_up; T2_up), respectively being indicative of whether communication can be performed over the respective transceiver (T1, T2).

8. End station according to claim 6, whereby the media selector (MS) derives a signal (T1_up) from the first transceiver (T1) being indicative of whether communication can be performed over the first transceiver (T1), and whereby the media selector derives a signal (T_up) from the data terminal equipment (DTE) being indicative of whether communication can be performed over either the first or the second transceiver (T1, T2).

9. End station according to claim 6, ~~7 or 8~~ whereby the first transceiver is a 100 Base TX transceiver and the first interface is a MII interface, and wherein the second transceiver is a 1000 Base CX transceiver and the second interface is a TBI or a GMII interface.

10. End station according to claim 7, comprising a PCS sub-layer being interposed in the signal path between the second transceiver and the data terminal equipment (DTE), whereby the PCS sub-layer provides a signal (T2-up) being indicative of whether the second transceiver is communicating.

11. End station according to claim 6, whereby the data terminal equipment (DTE) comprises two separate media access controllers (MAC) and an upper layer Ethernet control.

12. End station (ESQ) comprising

at least two data terminal equipments (DTEA; DTEB) each comprising at least one media access control unit for media access control (MAC) and signal conversion between high level protocol signals to reconciliation signals, such as MII signalling,

the data terminal equipments being adapted for to be coupled redundant LAN's (LAN A, LAN B), whereby the respective data terminal equipments comprises a loadsharing mechanism (LDSR),

each respective data terminal equipment being coupled to

a first transceiver (T1) being coupled to the data terminal equipment (DTE) over a first interface (IF1), the first transceiver (T1) being capable of operating at a first speed, and being coupled to a first media section (MSN, I),

a second transceiver (T2) capable of operating at a second speed and being coupled to the data terminal equipment (DTE) over a second interface (IF2) and being adapted to be coupled to a second media section (MSN, h), distinct from the first media section, the second transceiver (T1; T2) being capable of operating at a second speed, whereby the first and the second transceiver (T1, T2) is adapted to convert signals from connector signals to physical media signalling on the respective media paths (MP), the end station moreover comprising

a common media selector (MS) for monitoring whether signals can be transmitted over the respective first transceivers (T1) or over the second transceivers (T2), respectively, to opposing switch ports or transceivers and if signals can be transmitted over at least one second transceiver (T2), the common media sector (CMS) controlling at least one of the data terminal equipments (DTEA, DTEB) to communicate over the second transceiver (T2A, T2B).

13. End station according to claim 12, whereby if the signals can be transmitted over at least one second transceiver (T2A, T2B), the common media selector (CMS) controls both data terminal equipments (DTEA, DTEB) to communicate over both second transceivers (T2A, T2B), despite one of the second transceivers being non-operational and if none of the second transceivers are operational controlling the data terminal equipments (DTEA, DTEB) to communicate over the first transceivers.

14. End station according to claim 13, moreover comprising a loadsharing unit (LDSR), which distributes the load on the two redundant LAN's (LAN A, LAN B) and which monitors whether a LAN is considered deficient, and in case a particular LAN is considered deficient using the other LAN.

15. End station according to claim 1 ~~any preceding claim~~, wherein the selection of the first or second transceiver is invisible to the MAC layer in the data terminal equipment (DTE).